REMARKS

By way of this preliminary amendment, the specification has been amended to correct minor grammatical and typographical errors found in the specification, and to make the specification read better in the English language. With respect to the changes of "light tower" to "lamp", please refer to page 4, lines 21-23 of the original specification, which states that "In other words, the present invention takes advantages of the fact that the lamp control signals, which are used for on-and-off operations of the lamps, are typically identical irrespective of different types of models of the fabrication apparatuses." Accordingly, the changes to specification as made by way of this preliminary amendment are fully supported by the originally-filed specification, and thus no new matter has been added.

Similarly, claims 1, 2, 4 and 12 have been amended in accordance with the changes made to the specification. No new matter has been added.

Also, the title has been amended in a manner consistent with the amendments to the specification. No new matter has been added.

Lastly, the Abstract has been amended in a similar manner, and thus no new matter has been added.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

MARKED UP REPLACEMENT TITLE:

PRODUCTION SYSTEM WHEREIN FABRICATION DATA ARE COLLECTED USING [LIGHT TOWER] FABRICATION STATE INDICATING LAMP CONTROL SIGNALS

MARKED UP REPLACEMENT PARAGRAPHS:

Page 1, 2nd paragraph (lines 6-12):

The present invention relates generally to a production system which comprises a plurality of fabrication apparatuses arranged in series to successively processor assemble work units. More specifically, the present invention relates to such a production system wherein [light towers] lamps for visibly indicating processing states are provided to the fabrication apparatuses. Still more specifically, the present invention relates to such a system wherein the fabrication data are gathered using [light tower] processing states indicating lamp control signals.

Page 1, 4th paragraph (lines 17-23):

As shown in Fig. 1, the production system 10 is comprised of a plurality of fabrication apparatuses 12a-12n sequentially arranged so as to successively process or assemble work units applied from corresponding upstream apparatuses. More specifically, raw [word] work units (e.g., electronic components) are supplied to the first fabrication apparatus 12a whose outputs are then supplied to the following apparatus 12b, and these operations are repeated at the following

apparatuses, and finally the finished work units are obtained at the final fabrication apparatus 12n.

Page 2, 4th full paragraph (lines 26-28):

Another object of the present invention is to provide a production system wherein fabrication data are gathered using [light tower] lamp control signals used to control a [light tower] lamp which visibly indicates different process states of the apparatus.

Page 2, line 29 to page 3, line 9:

In brief, these objects are achieved by the techniques wherein a production system comprises a plurality of fabrication apparatuses arranged in series for performing a sequential processing of work units applied to the system. All or some of the fabrication apparatuses are respectively equipped with [light towers] a set of lamps each of which visually indicates fabrication states of the corresponding fabrication apparatus by energizing or de-energizing different colored lamps. A lamp control signal monitor is provided in each fabrication apparatus having the [light tower] set of lamps. The lamp control signal monitor receives lamp control information used to energize or de-energize the colored lamps, and stores the data indicative of start and finish time points and time durations of energization and de-energization of the colored lamps.

Page 4, 6th and 7th paragraphs (lines 13-23):

As referred to in the opening paragraphs, it is a common practice to provide each of the fabrication apparatuses with the option ([viz.] e.g., light tower) to visually indicate the states of the fabrication processes. The preferred embodiments of the present invention will be described with the option being a light tower or light towers. The light tower is typically equipped with white, red, yellow, and blue lamps so as to issue visible indications of different states of the production processes.

A principle underlying the present invention is to use [light tower] lamp control signals for collecting production data from fabrication apparatuses which are a mixture of different types in terms of production date, control systems, data format types, etc. In other words, the present invention takes advantage of the fact that the lamp control signals, which are used for on-and-off operations of the lamps, are typically identical irrespective of different types or models of the fabrication apparatuses.

Page 6, 2nd full paragraph (lines 13-21):

The lamp control signals, outputted from the controller 28, are also applied to the lamp control signal monitor 32, which comprises a parallel interface 42, a serial interface 44, a microprocessor unit (MPU) 46, and a memory 48. The lamp control signal monitor 32 is operatively coupled to the display 22, a display control switch 50, and the personal computer 52. The computer 52 serves to load suitable software to the [CPU] MPU 46, and applies date-and-time information to the MPU 46, and collecting the data stored in the memory 48. Further, the

computer 52 is coupled to a plurality of lamp control signal monitors of the other fabrication apparatuses (not shown in Fig. 3 but best shown in Fig. 4).

Page 8, 3rd paragraph (lines 17-28):

Fig. 6 is a block diagram schematically showing a third embodiment of the present invention. As illustrated, the third embodiment is provided with a file [sserver] server 64, the Internet server such as a mail server 66 and a www server 68. Other than this, the third embodiment is substantially identical to the second embodiment. The third embodiment features that the data, which are applied from the fabrication apparatuses 12a, 12b, and 12c and stored in the file server 62, can be accessed through the Internet. Further, the third embodiment has the advantage that when a given fabrication apparatus issues an alarm, an e-mail is automatically sent to one or more of predetermined telephones whose numbers are previously stored in the computer 52. In this case, it is necessary to previously determine an e-mail message corresponding to the alarm. It is to be noted that the file server 64 may be replaced with a memory installed within the personal computer 52.

Page 8, line 29 to Page 9, line 10:

Referring to Fig. 7, a fourth embodiment of the present invention is schematically shown in block diagram form. According to the instant embodiment, each of the fabrication apparatuses 12a, 12b, 12c, ...supplies a conventional LAN (local area network) 70 with the data stored in the corresponding lamp control

signal monitor (see Fig. 3). Since the LAN itself is well known in the art, the description thereof will be given in brief. The LAN 70 shown in Fig. 7 comprises a host computer 72, a file server 74, and a plurality of client computers 76a, 76b, ... Although not shown in Fig. 7, a typical LAN further comprises peripherals such as printers shared by client computers 76a, 76b, ... The fourth embodiment features that the data, which are applied from the fabrication apparatuses 12a, 12b, and 12c and stored in a file server [62] 74, can be shared by the client computers 76a, 76b, ...

MARKED UP REWRITTEN CLAIMS:

1. (Amended) A production system comprising a plurality of fabrication apparatuses arranged in series for performing a sequential processing of work units applied to the system, all or some of said fabrication apparatuses being respectively equipped with [light towers] sets of lamps each of which visually indicates fabrication states of the corresponding fabrication apparatus by energizing or de-energizing different colored lamps, said production system [comprises] comprising:

a lamp control signal monitor being provided in each of the [light tower] lamp equipped fabrication apparatuses, said lamp control signal monitor receiving lamp control information used to energize or de-energize said colored lamps, and storing data indicative of start and finish time points and time durations of energization and de-energization of the colored lamps

2. (Amended) The production system as claimed in claim 1, wherein each of the [light tower] lamp equipped fabrication apparatuses comprises a display coupled to the lamp control signal monitor, the display selectively indicating a time duration for which one of the fabrication states continues, the displaying being performed under control of said lamp control signal monitor and based on said data stored in the control signal monitor

4. (Twice Amended) The production system as claimed in claim 2, wherein the [light] lamp control signal monitor further comprises a switch for selecting one or more time durations to be displayed on the display.

12 (Amended) The production system as claimed in claim 3, wherein the [light] lamp control signal monitor further comprises a switch for selecting one or more time durations to be displayed on the display.

MARKED UP REWRITTEN ABSTRACT:

A production system comprises a plurality of fabrication apparatuses arranged in series for performing a sequential processing of work units applied to the system. All or some of the fabrication apparatuses are respectively equipped with [light towers] sets of lamps each of which visually indicates fabrication states of the corresponding fabrication apparatus by energizing or de-energizing different colored lamps. A lamp control signal monitor is provided in each fabrication apparatus having the [light tower] set of lamps. The lamp control signal monitor receives lamp control information used to energize or de-energize the colored lamps, and stores therein data indicative of start and finish time points and time durations of energization and de-energization of the colored lamps.